

WHAT IS CLAIMED IS:

1. An exposure apparatus, comprising:

an exposure apparatus main body that transfers a
5 predetermined pattern onto a substrate;

an exposure chamber that houses at least a part of said
exposure apparatus main body, and in which environmental
conditions are kept substantially constant;

an air conditioner that performs air conditioning inside
10 said exposure chamber;

a machine chamber that houses at least a part of said
air conditioner;

a supply path of gas for air conditioning supplied from
said machine chamber into said exposure chamber;

15 a first chemical substance removing filter arranged in
part of said supply path;

an exhaust path that forms a path of said gas for air
conditioning that returns to said machine chamber from said
exposure chamber; and

20 a second chemical substance removing filter arranged in
part of said exhaust path to remove chemical impurities in
said gas for air conditioning.

2. The exposure apparatus according to claim 1, wherein
25 said exposure chamber and said machine chamber are
severally formed inside different chambers.

3. The exposure apparatus according to claim 2, wherein

said exposure chamber and said machine chamber are arranged close to each other on a floor, and

said exposure chamber and said machine chamber are connected with each other via a freely detachable connection
5 unit.

4. The exposure apparatus according to claim 3, wherein said connection unit is constituted by an expandable and contractable bellows-like member.

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5. The exposure apparatus according to claim 3, wherein said first chemical substance removing filter is arranged in the vicinity of said connection unit.

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6. The exposure apparatus according to claim 1, wherein said exposure chamber and said machine chamber are formed in a same chamber.

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7. The exposure apparatus according to claim 1, wherein said machine chamber is provided with an outside air inlet, and

said exposure apparatus further comprising: a third chemical substance removing filter arranged in a path of air that is taken in through said outside air inlet.

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8. The exposure apparatus according to claim 1, wherein part of said supply path that is downstream of said first chemical substance removing filter is made of a material

outgassing less.

9. The exposure apparatus according to claim 1, wherein
said supply path is divided into a plurality of paths
5 in the downstream of said first chemical substance removing
filter arranged in part of the supply path, and

wherein each of said plurality of paths is connected to
a respective chamber of a plurality of different chambers
including said exposure chamber.

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10. The exposure apparatus according to claim 9, wherein
each of said plurality of paths is provided with an air
filter to remove particles in the vicinity of a blow port of
said gas for air conditioning to each of said plurality of
15 different chambers.

11. The exposure apparatus according to claim 1, wherein
said air conditioner includes a cooler that cools the
gas for air conditioning, which circulates within said machine
20 chamber, and a heater that heats the cooled gas, and

said exposure apparatus further comprising: a
controller that controls the surface temperature of said
cooler so that condensation does not occur.

25 12. The exposure apparatus according to claim 1, wherein
said exposure apparatus main body includes a substrate
stage that holds said substrate and an interferometer that
measures a position of said substrate stage, and

said exposure apparatus further comprising: another air conditioner that performs air conditioning of a part of the space inside said exposure chamber, where said substrate stage and said interferometer are arranged, independently of said
5 air conditioner.

13. The exposure apparatus according to claim 12, wherein

said another air conditioner shares a part of said air
10 conditioner.

14. The exposure apparatus according to claim 1, wherein a surface of said substrate is coated with a chemically amplified resist as a photosensitive agent.

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15. A device manufacturing method including a lithography process, wherein

exposure is performed in said lithography process by using the exposure apparatus according to claim 1.

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16. An exposure apparatus, comprising:

an exposure apparatus main body that transfers a predetermined pattern onto a substrate;

an exposure chamber that houses at least a part of said
25 exposure apparatus main body, and in which environmental conditions are kept substantially constant;

a machine chamber connected to said exposure chamber via a supply path and via an exhaust path;

an air conditioner arranged in said machine chamber that includes a cooler to cool gas for air conditioning circulating within the machine chamber and that performs air conditioning inside said exposure chamber; and

5 a controller that controls the surface temperature of said cooler so that condensation does not occur.

17. The exposure apparatus according to claim 16, wherein

10 said air conditioner further includes a heater that is arranged in said machine chamber and that heats said cooled gas.

18. The exposure apparatus according to claim 16, further comprising:

15 a drain pan arranged below said cooler in a direction of gravity.

19. The exposure apparatus according to claim 18, wherein

said drain pan is a drain pan that is not connected to a pipe system.

20. The exposure apparatus according to claim 16, wherein

said exposure apparatus main body includes a substrate stage that holds said substrate and an interferometer that measures a position of said substrate stage, and

said exposure apparatus further comprising: another air conditioner that performs air conditioning of a part of the space inside said exposure chamber, where said substrate stage and said interferometer are arranged, independently of said
5 air conditioner.

21. The exposure apparatus according to claim 20, wherein

said another air conditioner shares a part of said air
10 conditioner.

22. The exposure apparatus according to claim 16, wherein

a surface of said substrate is coated with a chemically
15 amplified resist as a photosensitive agent.

23. A device manufacturing method including a lithography process, wherein

exposure is performed in said lithography process by
20 using the exposure apparatus according to claim 16.

24. An exposure apparatus, comprising:

an exposure apparatus main body that transfers a pattern formed on a mask onto a substrate;

25 an exposure chamber that houses said exposure apparatus main body; and

another chamber constituting an environmental control chamber separate from said exposure chamber and arranged on

a side of said exposure chamber, wherein

a blow port of gas for air conditioning supplied into said exposure chamber is provided in a boundary area between said exposure chamber and said another chamber.

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25. The exposure apparatus according to claim 24, further comprising:

a mask transportation system housed in said another chamber, which transports a mask into said exposure apparatus main body and transports said mask from said exposure apparatus main body.

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26. The exposure apparatus according to claim 25, further comprising:

an air filter to remove particles, which is arranged on the side of said blow port opposite said another chamber.

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27. The exposure apparatus according to claim 24, further comprising:

a chemical substance removing filter arranged in the exhaust path of said gas for air conditioning that returns from said exposure chamber to an air conditioner for said exposure chamber.

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28. The exposure apparatus according to claim 27, wherein

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said air conditioner includes a cooler that cools said gas for air conditioning, and

said exposure apparatus further comprising: a controller that controls the surface temperature of said cooler so that condensation does not occur.

5 29. The exposure apparatus according to claim 24, wherein

supply paths and an exhaust paths are constructed and arranged for said exposure chamber and said another chamber such that air conditioning thereof is performed by a same air
10 conditioner.

30. The exposure apparatus according to claim 24, wherein

said exposure apparatus main body includes a substrate stage that holds said substrate and an interferometer that
15 measures a position of said substrate stage, and

said exposure apparatus further comprising: another air conditioner that performs air conditioning of a part of the space inside said exposure chamber, where said substrate stage
20 and said interferometer are arranged, independently of said air conditioner.

31. The exposure apparatus according to claim 30, wherein

25 said another air conditioner shares a part of said air conditioner.

32. The exposure apparatus according to claim 24,

wherein

a surface of said substrate is coated with a chemically amplified resist as a photosensitive agent.

5 33. A device manufacturing method including a lithography process, wherein

exposure is performed in said lithography process by using the exposure apparatus according to claim 24.

10 34. An environmental control method of an exposure apparatus that supplies gas at least the temperature of which is controlled into an exposure chamber that houses at least a part of an exposure apparatus main body such that environmental conditions are kept substantially constant
15 inside said exposure chamber, said exposure apparatus main body transferring a predetermined pattern onto a substrate, wherein

chemical impurities in said gas are removed in an exhaust path from said exposure chamber, and at least part of said
20 gas from which said chemical impurities have been removed is supplied into said exposure chamber via a chemical substance removing filter.

35. The environmental control method of the exposure
25 apparatus according to claim 34, wherein

the surface temperature of a cooler for said gas is set at such a temperature that condensation does not occur.

36. An environmental control method of an exposure apparatus that supplies gas at least the temperature of which is controlled into an exposure chamber that houses at least a part of an exposure apparatus main body such that
5 environmental conditions are kept substantially constant inside said exposure chamber, said exposure apparatus main body transferring a predetermined pattern onto a substrate, wherein

10 said gas is made to pass through a cooler before supplying said gas into said exposure chamber and the surface temperature of said cooler is set at such a temperature that condensation does not occur.

37. An exposure apparatus, comprising:
15 an exposure apparatus main body that transfers a predetermined pattern onto a substrate;

a substrate transportation system that transports said substrate to said exposure apparatus main body;

20 a first chamber that houses at least a part of said exposure apparatus main body and in which environmental conditions are kept substantially constant;

a first return duct an end of which is connected to said first chamber and through which gas exhausted from said first chamber passes;

25 a second chamber that houses at least a part of said substrate transportation system and in which environmental conditions are kept substantially constant;

a second return duct an end of which is connected to said

second chamber and through which gas exhausted from said second chamber passes; and

5 a first chemical substance removing filter that is connected to another end than said end of said first return duct and to another end than said end of said second return duct and that removes chemical impurities in both of gas exhausted from said first chamber and gas exhausted from said second chamber.

10 38. The exposure apparatus according to claim 37, further comprising:

a mask transportation system that transports a mask on which said predetermined pattern is formed.

15 39. The exposure apparatus according to claim 38, wherein

said mask transportation system includes a storing section that stores a plurality of masks.

20 40. The exposure apparatus according to claim 38, further comprising:

a third chamber that houses at least a part of said mask transportation system and in which environmental conditions are kept substantially constant; and

25 a third return duct an end of which is connected to said third chamber and through which gas exhausted from said third chamber passes, and wherein

another end than said end of said third return duct is

connected to said chemical substance removing filter together with said another end of said first return duct and said another end of said second return duct.

5 41. The exposure apparatus according to claim 37, further comprising:

a machine chamber in which a cooler, a heater and a blower that blows temperature-adjusted gas to said first chamber are arranged, and wherein

10 said first chemical substance removing filter is arranged inside said machine chamber and is connected to both of said another end of said first return duct and said another end of said second return duct via an opening made in part of said machine chamber.

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42. The exposure apparatus according to claim 41, further comprising:

a second chemical substance removing filter that is arranged in part of a supply path for supplying
20 temperature-adjusted gas from said machine chamber at least to said first chamber and removes chemical impurities in said temperature-adjusted gas.

43. The exposure apparatus according to claim 42,
25 wherein

said machine chamber and said first chamber are connected to each other to be separable, and

wherein said second chemical substance removing filter

is arranged in the vicinity of the connection between said machine chamber and said first chamber.